Clinical reviews

Our panel of GPs review recent research papers in their specialist areas that may influence the way you practise

Reviewers

Addiction
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GP Leeds and Clinical Director Lifeline Project RCGP regional lead substance misuse

Cardiovascular disease
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GP Watercress Medical, Medstead
GPwSI Cardiology, Southampton

Diabetes
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Mental health
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Obstetrics and gynaecology
Dr Chris Barclay
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Sexual health
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Cardiovascular disease

Smartphone programme boosts participation in cardiac rehabilitation

A smartphone-based home service improved uptake, compliance and completion of cardiac rehabilitation compared with a traditional centre-based programme, a study from Australia has shown. Health outcomes were similar with both approaches.

A total of 120 patients who had had a myocardial infarction (MI) took part in the unblinded, randomised controlled trial. Half the patients, mean age 55.7 ± 10.4 years, were randomised to a centre-based programme and the other half, mean age 55.5 ± 9.6 years, to a smartphone-based programme. The vast majority of patients, 82% and 85% respectively, were male.

The initial programme was for six weeks with a six-month self-maintenance period. The smartphone programme (Care Assessment Platform) was delivered in patients' homes and included health and exercise monitoring, motivational and educational material, and weekly mentoring consultations.

Uptake, adherence and completion rates were compared with the traditional centre-based programme using intention-to-treat analyses. Changes in clinical outcomes such as modifiable lifestyle factors, biomedical risk factors and health-related quality of life were assessed at baseline, six weeks and six months and compared within and between groups.

The smartphone-based programme had significantly higher uptake (80%) than the traditional centre-based programme (62%). Adherence rates (94% vs 68%) and completion rates (80% vs 47%) were also significantly better ($P < 0.05$).

There were significant improvements in the six-minute walk test from 510 ± 77 metres at baseline to 570 ± 80 metres in the smartphone group and from 537 ± 86 metres to 584 ± 99 metres in the group on the traditional programme. These improvements were maintained at six months.

Patients on the smartphone programme showed a small reduction in weight and also demonstrated significant improvements in emotional state and quality of life assessments at six weeks.

Cardiac rehabilitation is an essential component in the contemporary management of coronary heart disease. Enrolment in, and completion of, a well organised cardiac rehabilitation programme is effective in the prevention of recurrent events following MI.

However, more often than not the challenge lies in effective patient engagement. Programmes that use novel approaches are welcome if they can increase the delivery of this key, and often overlooked, intervention.

The authors conclude that a smartphone-based home care cardiac rehabilitation programme improved post-MI rehabilitation uptake, adherence and completion. Importantly, not only were patients more effectively engaged with the home-based programme but this method was also as effective in improving physiological and psychological health outcomes as a traditional programme.

Studies such as this, albeit small, are important in providing cardiac rehabilitation programmes with the evidence they require to innovate and improve the uptake of this important intervention.

DR PETER SAVILL

● **Varnfield M, Karunanithi M, Lee C-K et al. Smartphone-based home care model improved use of cardiac rehabilitation in post myocardial infarction patients: results from a randomised controlled trial. *Heart* 2014;100:1770-1779 doi:10.1136/heartjnl-2014-305783** »

Mental health

Psychotherapy effective for subthreshold depression

Psychological interventions may be effective in the treatment of subclinical depression and prevent progression to major depression, but more high quality evidence is needed, a meta-analysis has concluded.

Eighteen randomised controlled trials met the inclusion criteria for the meta-analysis. The 1,913 participants were adults with 'clinically relevant depressive symptoms' identified either by using a self-rating depression questionnaire e.g. CES-D score 8-15 or a diagnostic interview. There were 947 patients in the treatment group and 966 in the control group.

The studies were conducted in a wide variety of community, primary and secondary care settings with participants across a broad age range, from university students to nursing home residents. The interventions were also heterogeneous, although most were based on CBT.

Psychotherapies had a small to moderate effect on depressive symptoms, pooled effect size 0.35 (95% CI:0.23-0.47), with a number needed to treat (NNT) of 5. There was a significant reduction in the incidence of major depression at six months, relative risk (RR) = 0.61; NNT = 10 and possibly at 12 months, RR = 0.74; NNT = 16.

However, the effect size was significantly smaller than that for psychotherapy in major depression, and the authors suggest that the apparent benefit may be due to non-specific effects of treatment. Most studies of psychotherapy use patients on waiting lists or treatment as usual as control groups. Any observed benefit may be due simply to the increased support, engagement and monitoring rather than the intervention itself.[1]

There is no agreed definition of subthreshold depression. Judd and colleagues defined this as two or more simultaneous symptoms of depression, present for most of the time over a period of at least two weeks, and associated with some impairment of functioning.[2]

To meet the criteria for DSM IV minor depression, one of the symptoms must be either depressed mood or loss of interest. One of the larger trials included in the meta-analysis required at least three symptoms, present for at least four weeks.[3]

Antidepressants are no more effective than placebo as a treatment for patients with minor depression.[4] I would take the view that the threshold of DSM IV major depression also defines a boundary above which the specific benefits of psychotherapy are clear but below which they are not.

Therefore, in the first instance, we should offer watchful waiting to patients with subthreshold depression.

For those who progress to mild major depression or who have persistent subthreshold symptoms after 2-3 months' follow-up, NICE recommends a low-intensity psychosocial intervention.[1] In practice, this is usually CBT-based guided self-help, although this may only have limited short-term benefit.[5]

The British Association for Psychopharmacology guideline recommends that antidepressants should be considered.[6]

I agree that there is a need for more research, specifically comparing psychotherapy, antidepressants and placebo for primary care patients with persistent subthreshold symptoms. The two included studies which did make this comparison in this setting found that neither antidepressants nor problem solving therapy were any better than watchful waiting for adults aged 18-59 with minor depression,[7] and that antidepressants (paroxetine) were the most effective option for those aged 60 and above.[3]

When treating depressed patients we should carry out a careful assessment of the severity of symptoms, the degree of functional impairment and the duration of the episode. We then need to separate those with subthreshold symptoms from those with major depression.

The treatment of choice in subthreshold depression remains watchful waiting; if symptoms persist for longer than eight weeks, we can offer a choice of continued watchful waiting, psychotherapy or antidepressants.

DR PHILLIP BLAND

● **Cuijpers P, Koole SL, van Dijke A et al. Psychotherapy for subclinical depression: meta-analysis. *Br J Psychiatry* 2014;205: 268-74**

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Urology

Ultrasound vs CT in suspected renal colic

Ultrasound may be a viable alternative to CT scanning as an initial investigation for suspected nephrolithiasis, the findings from a study in the United States suggest.

A total of 2,759 patients aged 18-76, presenting to an emergency department with suspected renal colic

were randomly assigned to either initial diagnostic ultrasound carried out by an emergency physician (908), ultrasound by a radiologist (893), or abdominal CT scan (985).

There were three primary outcome measures: high-risk diagnoses with complications that could be related to missed/delayed diagnosis (e.g. ruptured abdominal aortic aneurysm, appendicitis with rupture, diverticulitis with abscess formation etc), cumulative radiation exposure from imaging, and total costs (not reported in this paper).

No significant difference was seen between groups in terms of high-risk diagnoses with complications. There were six cases (0.7%) in the point of care ultrasound group, three (0.3%) in the other ultrasound group and two (0.2%) in the CT group (P = 0.30).

Cumulative radiation exposure over six months following presentation was significantly lower in the two ultrasound groups (10.1 mSv and 9.3 mSv respectively) compared with initial CT scanning (17.2 mSv; P < 0.001). There was also no difference seen in the numbers of serious adverse events between the groups: 12.4%, 10.8% and 11.2% respectively; P = 0.50).

Diagnostic accuracy was also assessed as a secondary outcome measure. Within six months of randomisation, the proportion of patients with a confirmed diagnosis of kidney stones was similar in the three groups – 34.5%, 31.2% and 32.7% respectively.

Overall, 40.7% of patients who underwent ultrasound by an emergency physician subsequently received a CT scan, compared with 27.0% of patients in the radiology ultrasound group. Only 5.1% of patients who initially had a CT scan had ultrasound later on.

At initial test, ultrasound had lower sensitivity and higher specificity than CT. The sensitivity was 54%, 57% and 88% for the three arms, and specificity 71%, 73% and 58% respectively.

This study, published in the *New England Journal of Medicine*, begins with the premise that 'there is a lack of consensus about whether the initial imaging method for patients with suspected nephrolithiasis should be CT or ultrasound'.

Ultrasound is simple, safe, cheap and non-invasive but may lack sufficient accuracy to be a useful diagnostic test. CT, on the other hand, may be the gold standard in terms of diagnostic sensitivity and specificity, but can be difficult to arrange urgently, is significantly more expensive and involves a significant dose of radiation to the patient.

The study was conducted in an emergency department setting, so caution must be exercised in extrapolating the findings to a UK primary care population.

So, what test should a GP request when a patient presents with suspected renal colic?

Clearly, local radiology guidelines will reflect the preferences of the radiologists and will be different according to local expertise and availability of the imaging modalities.

British and European urology guidelines stress that CT is the definitive investigation, but that ultrasound is a reasonable alternative, particularly in thinner patients where good images can be obtained, both in terms of direct visualisation of the calculus and secondary signs such as dilation of the ureter which may suggest an obstructing stone.

This study emphasises that ultrasound appears to be a reasonable initial investigation, with the potential for reducing unnecessary radiation exposure in those who do not subsequently require CT scanning.

DR JONATHAN REES

● **Smith-Bindman R, Aubin C, Bailitz J et al. Ultrasonography versus computed tomography for suspected nephrolithiasis. *N Engl J Med* 2014;371:1100-10** »



Diabetes

Enterovirus linked to type 1 diabetes in children

A large retrospective population-based cohort study from Taiwan has added weight to the association between enterovirus infection and onset of type 1 diabetes in childhood.

Diagnostic information was extracted from the Taiwanese National Health Insurance Research Database (NHIRD) for children aged 18 years or younger.

The study population included two groups. The first group had insurance claims that implicated clinical diagnosis of an enterovirus (EV) infection. This covered all EV-specific diagnoses, as well as infections caused by coxsackievirus, such as herpangina, hand foot and mouth disease, meningitis, pleurodynia, pericarditis and myocarditis. In total 576,967 children were included in these categories between 2000 and 2007.

The control group of children without evidence of these infections (non-EV) totalled 3,129,171.

The populations were matched by sex, birth year and index date of infection, giving a final matched study population of 57,0133 children in each arm. Mean age at entry and sex distribution was similar in both groups. Mean follow-up time was 6.4 years. Follow-up in person years was derived for each child from index date to December 2008.

The incidence of type 1 diabetes was lower in the non-EV group (4 vs 6 per 100,000 person-years), adjusted HR 1.48. (95% CI:1.19-1.83). EV infection was strongly associated with type 1 diabetes, exerting a 50% increased risk after one year of follow-up.

Children aged >10 years at entry also had a higher risk of type 1 diabetes HR 2.18 (95% CI:1.18-4.04).

Compared with the non-EV group, the EV group also had a significantly higher prevalence of atopic dermatitis, allergic rhinitis and bronchial asthma.

Findings from the DIAMOND study[1] and EURODIAB[2] have shown a rising epidemic of type 1 diabetes – a fact often forgotten when we discuss the massive numbers of cases of type 2 diabetes.

The increase in incidence seems to be across all genetic backgrounds, with variations more likely to be environmental than genetic.

GPs need to be alert to the presentation of type 1 diabetes in the younger child. A recent study showed that diabetes in this age group was often only diagnosed after multiple visits.

The Environmental Determinants of Diabetes in the Young (TEDDY) study has suggested that there is a link between coxsackievirus infection and type 1 diabetes in children in Finland, the country with the highest incidence of type 1 diabetes in children in the world.[3] If such a link can be determined in the long term, a vaccination programme might reduce the risk of developing type 1 diabetes.

DR MATTHEW LOCKYER

● **Lin H-C, Wang C-H, Tsai F-JC et al. Enterovirus infection is associated with an increased risk of childhood type 1 diabetes in Taiwan: a nationwide population-based cohort study. *Diabetologia* 2014; doi:10.1007/s00125-014-3400-z**

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Sexual health

Exploring women's reasons for requesting termination

Financial concerns followed by contraceptive failure were the reasons most frequently cited by women requesting a termination in a study from the NE of England.

A total of 274 women attending a termination of pregnancy (TOP) pre-assessment clinic at Hull Royal Infirmary answered a confidential, anonymous, self-administered questionnaire between January 2011 and November 2012.

The questionnaire was designed to capture demographic details and the reasons for the TOP request. Patients were asked to rank the listed reasons in order of importance and could cite other reasons that were not listed.

The age breakdown was: 28.1% under 21 years of age, 36.1% between 22 and 29 and 29.1% over 30, 6.6% did not answer.

More than half (59.5%) were single, 28.8% were married or cohabitating, 8.8% were divorced or separated and 2.9% did not answer. The sample was mainly white (93.4%) and almost half (45.6%) had at least GCSE level of education, excluding 14.2% who did not answer.

Overall, financial worry was the most frequently cited reason, followed by contraceptive failure and concerns about education or career. The most frequent reason for those under 21 was concerns about their education or career (26.2%) followed closely by financial worries (25.6%). The top two reasons cited for the 22-29 age group were financial worries (25.4%) and

contraceptive failure (23.3%). Women over 30 most often cited completion of family as the main reason (24.3%) for TOP, followed by contraceptive failure (18.1%).

The same four reasons featured most frequently when the sample was analysed according to marital status. Single women cited financial worries (21%) as the most frequent reason, followed by contraceptive failure (17.4%); for married women, it was contraceptive failure (16.2%), financial worries and completion of family were ranked second equal (12.8%); for those who were divorced, completion of family was the main reason (20.4%) followed by contraceptive failure (18.3%).

There could be several reasons for citing contraceptive failure. The authors suggest that this might be a more socially acceptable response when no contraception was used; another is the concern that women may not be accessing contraception when it is needed or that access might be restricted.

Previous studies have shown there is rarely a solitary reason for termination; the decision making is often complex and the reasons interrelated.

This study appeared to highlight some opportunities where unintended pregnancies could have been avoided. Contraception failure (or failure to use contraception) was a common reason for requesting termination regardless of age, marital status and educational attainment.

This confirms the importance of offering women who are sexually active the opportunity to discuss reliable contraceptive methods that suit their needs; this could be condoms as well as hormonal contraception, long acting or otherwise.

DR RICHARD MA

● **Wokoma TT, Jampala M, Bexhell H et al. Reasons provided for requesting a termination of pregnancy in the UK. *J Fam Plann Reprod Health Care* doi:10.1136/jfprhc-2013-100745 published online first 10/6/2014**

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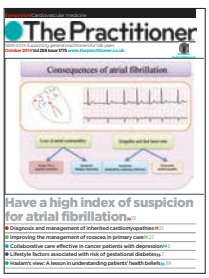
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